

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference PHDE030290WO	FOR FURTHER ACTION		See item 4 below
International application No. PCT/IB2004/051428	International filing date (<i>day/month/year</i>) 09 August 2004 (09.08.2004)	Priority date (<i>day/month/year</i>) 21 August 2003 (21.08.2003)	
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237			
Applicant PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH			

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).

2. This REPORT consists of a total of 6 sheets, including this cover sheet.

In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- | | | |
|-------------------------------------|--------------|---|
| <input checked="" type="checkbox"/> | Box No. I | Basis of the report |
| <input type="checkbox"/> | Box No. II | Priority |
| <input type="checkbox"/> | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability |
| <input type="checkbox"/> | Box No. IV | Lack of unity of invention |
| <input checked="" type="checkbox"/> | Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> | Box No. VI | Certain documents cited |
| <input type="checkbox"/> | Box No. VII | Certain defects in the international application |
| <input type="checkbox"/> | Box No. VIII | Certain observations on the international application |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland		Date of issuance of this report 21 February 2006 (21.02.2006)
Facsimile No. +41 22 740 14 35		Authorized officer Idhir Britel
		Telephone No. +41 22 338 70 60

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 02 NOV 2004

WIPO PCT PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/B2004/051428

International filing date (day/month/year)
09.08.2004

Priority date (day/month/year)
21.08.2003

International Patent Classification (IPC) or both national classification and IPC
G06T11/00, G06T7/00

Applicant
PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Werling, A

Telephone No. +49 89 2399-6008



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/051428

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/051428

**Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or
Industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	4-6
	No: Claims	1-3,7-10
Inventive step (IS)	Yes: Claims	4-6
	No: Claims	1-3,7-10
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V.

- 1 The following documents are referred to in this communication:

D1 : HOFFMANN K R ET AL: "BIPLANE X-RAY ANGIOGRAMS, INTRAVASCULAR
ULTRASOUND, AND 3D VISUALIZATION OF CORONARY VESSELS" INTERNATIONAL
JOURNAL OF CARDIAC IMAGING, DORDRECHT, NL, vol. 15, no. 6, December 1999
(1999-12), pages 495-512, XP000922535 ISSN: 0167-9899

- 2 INDEPENDENT CLAIMS 1 and 10

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because
the subject-matter of claim 1 is not new in the sense of Article 33(2) PCT.
Document **D1** discloses (the references in parenthesis applying to this document):

A device for generating a three-dimensional model of a spatial structure (G)
comprising:

an imaging unit for generating two-dimensional projection images of the structure
from various directions;

a display unit that is coupled to the imaging unit for displaying one of the
projection images as a reference image, in which connection the display unit
comprises input means in order to make possible the interactive specification of at
least one image point of the structure as a reference point;

a data processing device that is coupled to the imaging unit and the display JO
unit and is designed to reconstruct the space point, belonging to a reference point,
of a structure from further projection images produced from other directions using
the image-processing unit.

In conclusion, claim 1 is not novel over **D1**.

The same arguments also apply by analogy to independent claim 10 which is also
not novel.

- 3 Dependent claims.

Claim 2 is also not novel over **D1** since the angiograms of **D1** are generated using
X-ray imaging.

Claim 3 claims over claim 1 the additional feature of restricting the search for corresponding points in the further projection images to the epipolar line defined by the reference point, thus reducing the two-dimensional correspondence problem to a one-dimensional one. However, this technique is well known in the art of stereo vision and is also suggested by **D1**, see p. 498, left col., last par. In conclusion, this feature does not render claim 3 novel over the prior art.

Claim 7 is not novel because **D1** is also dealing with vascular structures which are defined by a plurality of reference points.

Likewise, claim 8 is not novel over **D1** because the additional feature of estimating the vessel width from the reconstructed model is also anticipated by **D1** (see p. 498, right col., "*Estimation of the vessel lumen*").

Claim 9 claims over claim 1 the additional feature of using projection images that originate from the same phase of a cyclic motion of the object (i.e. ECG-gated images). This feature is already known from **D1**, see p. 503, right. col., and claim 9 is therefore not novel over **D1**.

Furthermore, the technique of ECG-gating is well known in the art of medical image processing and its inclusion into the method of **D1** would be a straightforward step to the skilled person without requiring any inventive skill.

- 4 In the examiner's current understanding, it appears that no objections under Article 33(1-3) PCT have to be raised against claims 4, 5 and 6 at presently on file.